



Our 2nd month! Electrical code issues and answers.

● Closed circuit cable TV security cameras integrated with control circuits.

We have not required inspection or licensing for the installation of coaxial cable in commercial cable television or closed circuit cable television systems, since RCW 19.28.010 exempts *“television wires and equipment, and television antenna installations, signal strength amplifiers, and coaxial installations pertaining thereto.”*

However, the integration of line voltage or limited energy controls for cameras and equipment into closed circuit coaxial cable television systems is not exempt. Such systems are security systems and require electrical work permits and inspection, contractor licensing, and electrician certification in the general electrical or limited energy specialty electrical categories.

● Access handholes in metal poles supporting light fixtures and signs

Metal poles supporting lighting fixtures or signs shall have a minimum 2” x 4” accessible handhole in the pole to provide access for raceway bonding and equipment grounding terminations and to facilitate installation or replacement of the conductors within the pole. The specific requirements and installation details can be found in NEC 410-15(b) and NEC 600-5(c)(3).

● Article NEC 300-11 and WAC 296-46-30001 – Raceways supported by wires

The code does not prohibit the installation of conduit on wires installed in addition to, and independent of, the ceiling support wires. Where independent support wires are used, they shall meet all of the requirements of WAC 296-46-30001 (Exception: Number 12 wire will be permitted as the minimum size wire to support raceways while a WAC change to that effect is being processed). If raceways in compliance with WAC 296-46-30001 are intended to be installed on wires required for supporting the ceiling assembly, then the contractor should present to the inspector the ceiling manufacturer’s installation instructions permitting the additional weight of the raceways, conductors, and equipment.

● Article NEC 547 – AGRICULTURAL BUILDINGS

There is a need for a practical interpretation of the scope of Article 547. The special conditions of this article are most appropriately applied to large commercial poultry, livestock, and fish confinement systems. Areas that have automated feed handling systems likely to generate and accumulate excessive dust, areas accumulating quantities of animal excrement, and livestock confinement areas that are wet due to constant washing for cleaning and sanitizing represent the conditions that the restrictions of Article 547 are intended to address. Areas with specific conditions that are judged likely to be present should be wired according to the specific sections of Article 547 that apply. It is not necessary to require an equipotential plane in agricultural buildings confining animals not sensitive to small voltage gradients, buildings not subject to wet conditions, or buildings subject to dust accumulation only.

The vast majority of buildings on residential property used to house a few animals, predominantly in conditions of bad weather, would not be subject to the restrictions of Article 547. Conditions such as open ventilation of areas used by animals, small numbers of animals, moderate accumulations of excrement and dust, and frequent cleaning and maintenance of these areas can all be used by the inspector to judge the applicability of Article 547. Inspectors are encouraged to apply NEC 547-2 whenever the conditions of the agricultural use will permit.

● Transformer clearances from combustible surfaces per NEC 450-21.

The general requirement of NEC 450-21(a), for dry-type transformers installed indoors and rated 112½ KVA or less, is a minimum clearance from combustible materials of 12 inches. NEC 450-21(b) requires that individual dry-type transformers installed indoors and rated over 112½ KVA shall be installed in a transformer room of fire-resistant construction. Sections (a) and (b) have exceptions to these requirements and both sections have an Exception No. 2 that includes the qualifying term *“completely enclosed.”* This term needs further definition.

Transformers are “*completely enclosed*” when the coils are mounted within a metal enclosure to prevent accidental contact with energized parts. The enclosure may or may not have openings for ventilation near the top and screened or slotted openings on the bottom. (“*Totally enclosed*” transformers have no ventilation openings at all.) Even though completely enclosed transformers can be virtually open on the bottom side, adequate clearance from the coils to combustible surfaces is maintained by design and NEMA construction standards. If a transformer is completely enclosed, then the minimum clearances that must be maintained are for adequate ventilation and heat dissipation. The required clearances must be clearly marked on the transformer.

● Domestic well specialty electrical technician

There is a new specialty electrical contractor’s license, administrator’s certificate, and specialty electrical technician certificate that have been developed in conjunction with representatives of the well drilling industry. The specialty is specifically limited to the extension of a branch circuit, which is supplied and installed by others, to pump controllers; pressure switches; alarm sensors; and water pumps that do not exceed 7½ horsepower at 230 volts AC single phase for domestic (residential) water systems.

The adoption of this specialty category will not require electrical licensing or certification for those well drilling or pump contractors that only install pumps and conductors **within the well casing**. The new specialty will allow Domestic Well (03A) specialty electrical technicians to perform limited electrical work outside the well casing. This work has previously been restricted to General (01), Residential (02), and Pump and Irrigation (03) contractors and electricians. The installation of services, feeders, branch circuits to feed domestic water systems, and conductors and equipment beyond the scope of the domestic well specialty still requires (01), (02), or (03) electrical licensing and certification.

For applications received prior to December 1, 1998, persons will be eligible to take the domestic well specialty electrical technician examination by submitting to the department a signed and notarized letter from employer(s) stating that they have “*at least four years of prior experience installing domestic water systems, including pump installations, under the supervision of a firm carrying on the business of installing domestic water systems.*” Employers must establish appropriate business status by supplying copies of their Water Well Construction Operator’s License, RCW 18.27 Contractor’s Registration, or Business License for the time period being certified for themselves or their employees. Individuals will be permitted to take the domestic well specialty electrical technician examination after submitting a qualifying application and paying the appropriate examination fees. Specialty electrical technician certificates will be issued upon successful passage of the examination. All individuals that submit applications prior to December 1, 1998, and qualify to take the exam based on those standards, will remain qualified to take the exam after that date.

After December 1, 1998, all applicants must show at least two years (4000 hours per WAC 296-401-100) of experience as a certified trainee installing domestic pump systems under the direct supervision of a domestic well specialty electrical technician, a pump and irrigation specialty electrician, or a journeyman electrician. Labor and Industries’ compliance officers and electrical inspectors shall determine that each person doing electrical work on the job site has a proper journeyman, specialty, or trainee certificate per WAC 296-401 sections 120 and 165. Not more than two trainees shall be permitted to work on a job site for every specialty electrical technician, specialty electrician or journeyman electrician working as a specialty electrician.

In order to renew a domestic well specialty electrical technician certificate, the holder must demonstrate evidence of completion of continuing education course(s) of at least eight classroom hours duration per year of the prior certification period. At least eight of those total hours shall be on the current National Electrical Code changes. Continuing education courses with relevant electrical content, approved by the Department of Ecology for renewal of the Washington Water Well Construction Operator’s License may be presented and considered by the department for approval.

To obtain a domestic well specialty administrator’s certificate, an individual must complete an application for examination furnished by the department, pay the appropriate examination fees, and successfully pass the administrator’s examination. A detailed explanation for obtaining an electrical contractor’s license (domestic well specialty or other type) is provided in RCW 19.28.120.

If you have further questions about the new specialty certificates or contractors license, you may contact Phyllis Cooper at (360) 902-5252, or Electrical Licensing and Certification at (360) 902-5269, PO Box 44460, Olympia, WA 98504-4460.